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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,445	11/14/2003	David Alan Burton	END9-2002-0061US1	9621
45216	7590	03/10/2006	EXAMINER	
KUNZLER & ASSOCIATES 8 EAST BROADWAY SUITE 600 SALT LAKE CITY, UT 84111			MASDON, DAVID T	
			ART UNIT	PAPER NUMBER
			2188	

DATE MAILED: 03/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/713,445	BURTON ET AL.	
	Examiner	Art Unit	
	David Masdon	2188	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>11/14/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) was submitted on 11/14/2003. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Drawings

2. The drawings filed on 11-14-2003 have been approved by the examiner.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-27 rejected under 35 U.S.C. 102(b) as being anticipated by Selkirk et al (US 2002/0053009).

With regard to claim 1, Selkirk et al discloses an apparatus for managing incremental storage, the apparatus comprising:

a storage pool management module configured to allocate storage volumes to a virtual volume; and [(system to allocate storage units in virtual mapping method) page 5, section 0082]

an incremental log corresponding to the virtual volume, the incremental log configured to map a virtual address to a storage address. [(logical device structure created to map virtual data) page 5, section 0076]

With regard to claim 2, Selkirk et al discloses the apparatus of claim 1, wherein the storage address comprises a volume identifier. [(data identifier used in mapping data) page 1, section 0006]

Claims 3,4 rejected with the same rationale as claim 2.

With regard to claim 5, Selkirk et al discloses the apparatus of claim 1, wherein the storage pool management module is further configured to monitor available space on the storage volumes. [(tables for unallocated space) page 6, section 0087]

With regard to claim 6, Selkirk et al discloses the apparatus of claim 1, wherein the storage pool management module is further configured to allocate a second storage volume to the virtual volume in response to a reduction in available space on a first storage volume. [(set of RAID disks may include a grouping of disks) pages 7-8, sections 0097-0109]

With regard to claim 7, Selkirk et al discloses the apparatus of claim 1, wherein the storage volumes comprise at least one volume corresponding to a redundant set of storage devices. [(redundant array of disks) page 3, section 0042]

With regard to claim 8, Selkirk et al discloses the apparatus of claim 7, wherein the redundant set of storage devices comprises a RAID (Redundant Array of Independent Disks) storage array. [(RAID system) page 3, section 0042]

With regard to claim 9, Selkirk et al discloses the apparatus of claim 1, wherein the incremental log comprises a lookup table. [(mapping table to reference original data file) page 1, section 0006]

With regard to claim 10, Selkirk et al discloses the apparatus of claim 1, further comprising a stripe map configured to store the storage address. [(RAID stripe from set of disk drives) page 7, section 0097]

With regard to claim 11, Selkirk et al discloses the apparatus of claim 1, wherein the incremental log is further configured to append a storage address mapping in response to a write operation. [(new pointer generated during write operation) page 12, section 0175]

Claim 12 rejected with the same rationale as claims 1 and 11.

With regard to claim 13, Selkirk et al discloses method of claim 12, further comprising providing incremental snapshot data of a source volume in response to a replication operation. [(data file snapshot) page 1, section 0006]

Claims 14, 20, 26 rejected with the same rationale as claim 5.

Claim 15 is rejected with the same rationale as claim 6.

Claim 16 is rejected with the same rationale as claim 1.

With regard to claim 17, Selkirk et al discloses system of claim 16, further comprising a replication module configured to transmit replicated data from a source volume to the virtual volume. [(data subsystem performs copy of data) page 1, section 0006]

Claims 18, 25 rejected with the same rationale as claim 13.

Claim 19 is rejected with the same rationale as claims 2 and 3.

With regard to claim 21, Selkirk et al discloses the system of claim 16, further comprising a policy management module configured to control operation of the storage pool management module. [(management interface) Fig. 5, element 516]

Claim 22 rejected with the same rationale as claim 11.

Claims 23, 24 rejected with the same rationale as claim 12.

Claim 27 is rejected with the same rationale as claims 1, 21.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

US 2005/0004979 – Berkowitz et al – METHOD AND SYSTEM FOR
TRANSPORTING DATA CONTENT ON A STORAGE AREA NETWORK

US 2002/0178335 – Selkirk et al – APPARATUS AND METHOD FOR
DYNAMICALLY CHANGEABLE VIRTUAL MAPPING SCHEME

US 6,182,198 – Hubis et al – METHOD AND APPARATUS FOR PROVIDING A
DISC DRIVE SNAPSHOT BACKUP WHILE ALLOWING NORMAL

US 6,038,639 – O'Brien et al – DATA FILE STORAGE MANAGEMENT SYSTEM
FOR SNAPSHOT COPY OPERATIONS


US 5,089,958 – Horton et al – FAULT TOLERANT COMPUTER BACKUP
SYSTEM

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Masdon whose telephone number is (571)272-6815. The examiner can normally be reached on Monday - Friday, 7am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (571)272-4210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DM
Friday, March 03, 2006


MANO PADMANABHAN 3/3/06
SUPERVISORY PATENT EXAMINER